EUM LIBRARY

MAR 1 5 1946

HERPETOLOGICA

A JOURNAL DEVOTED TO THE STUDY OF
REPTILES AND AMPHIBIANS
Established 1936

CHAPMAN GRANT, 2970 Sixth Ave., San Diego 3, California
Publisher

WALTER L. NECKER, *Editor,* $3.00 per vol.

Vol 3 San Diego, California February 23, 1946 Part 2

Thomas Barbour—Herpetologist
1884-1946

By Arthur Loveridge

The activities and interests of Dr. Thomas Barbour, late Alexander Agassiz Professor of Zoology, and Director of the Harvard University Museums, were so numerous and diverse that it would be impossible to accord them adequate treatment in so brief an article as this. Any attempt to do so would probably result in a lengthy list like that which occupied nearly three-quarters of a column in the New York Times of January 9, 1946. Instead, this appreciation will be confined to considerations of the work and influence of Thomas Barbour in the field of herpetology.

Though for a time birds vied with reptiles and amphibians in the Barbour boy's affections, it was the reptiles that triumphed and came to occupy the principal place among his interests. Unlike so many youngsters for whom reptiles, or at least snakes, exert a passing attraction, the youthful Tom, at an early age, determined to make these creatures the subject of his chief endeavor. This hobby resulted in his becoming a frequent visitor to the New York Zoological Society's Gardens, where keepers would save defunct reptiles for him so that he rarely returned home empty-handed Such treasures, duly pickled, formed the nucleus of the collection that in 1903 Barbour, then an undergraduate at Harvard, presented to the Museum of Comparative Zoology.

In those days there was but one curator for Reptiles, Amphibians, and Fishes—Samuel Garman. So when Austin Clark introduced Barbour to Garman, the overworked curator must have welcomed the help that the new student was able to give him. There was at that time a great accumulation of unnamed herpetological material and the young naturalist was delighted at being allowed to attempt their identification. Apart from an annotated list of the reptiles found near a camp in New Hampshire, where Barbour had spent the summer of 1901, his first contributions

to herpetological literature were, appropriately enough, based on material from the museum with which he was to be so closely associated. In these first papers that appeared in 1903, the youthful undergraduate described some chameleons and a flying lizard that he had come across in the museum collection.

In succeeding years Barbour visited the Bahamas and Bermuda, laying the foundation for a special interest in West Indian herpetology that was to endure to the end of his life. In fact his 1914 "Contribution to the Zoogeography of the West Indies," that served as a companion volume to his "Contribution to the Zoogeography of the East Indian Islands" (1912), were two of his major works.

The latter was based on the herpetological spoils resulting from his wedding trip. For, following his marriage to Miss Rosamond Pierce, the young couple set out on a tour that took them to India, Burma, Malaya, China, and a dozen islands of the Netherlands Indies and New Guinea. Collecting was carried out wherever possible, or, when time was short, Barbour arranged with a local zoologist, native or otherwise, to preserve specimens that could be picked up on the return journey.

Back at Harvard, Barbour worked on his zoogeography of the East Indies, which he submitted as a thesis for the Ph. D. degree conferred on him in 1911. When, that same year, he was appointed Associate Curator of Reptiles and Amphibians at the Museum of Comparative Zoology, another of his youthful ambitions was realized. One of his earliest reports states that there were then 1,440 species of snakes and lizards in the collection, about one third of what the museum possesses today. It is doubtful if the herpetological collections of any museum ever grew so quickly as did those of Harvard under the curatorship of Dr. Barbour. From all parts of the tropics he acquired collections and presented them to the museum. If, when visiting other museums he was shown some choice item, he would offer an advantageous exchange and if that failed would communicate with the collector to obtain a fresh specimen. His indefatigable zeal stimulated correspondents to search for the rarer desiderata, *Lanthanotus borneensis* for example, and when their labours were crowned with success no one could be more generously appreciative than Tom Barbour.

It was through correspondence that I first became acquainted with T. B., as he was known to many of his associates, for early in 1914 he described an extraordinarily interesting lizard (*Algiroides alleni*), with European affinities, from the alpine zone of Mount Kenya. The description appeared in the Proceedings of the New England Zoological Club, then difficult to obtain for the proceedings had been launched by a small group of Cambridge naturalists who desired a medium for the prompt publication of their finds. Each contributor financed his own printing, the club, as such, being non-existent. At the time the paper appeared I was about to leave for Kenya Colony (then British East Africa) to take up the curatorship of the Natural History Museum. As there appeared

THOMAS BARBOUR

to be no other way of getting a copy of the description I wrote to Dr. Barbour who, with characteristic generosity, sent me a set of his already voluminous publications.

Among them was one describing a new race of chameleon, also collected on the mountain slopes by Glover M. Allen. By one of those strange coincidences that lend a zest to zoological research, the same form was figured and named by Einar Lonnberg in a Swedish journal. But Barbour's article appeared just two weeks ahead of Lonnberg's, so his name stands and the reptile in question is now known as *Chamæleo fischeri excubitor* Barbour.

The name and fame of Barbour soon began to attract the attention of postgraduate students and many elected to take a course in herpetological research under him. Among those who won distinction by their investigations in this field are Drs. P. E. P. Deraniyagala, E. R. Dunn, and the late G. K. Noble. The majority, however, following graduation, of necessity took up teaching. Indeed vacancies in herpetological appointments were so few and far between that in later years Professor Barbour accepted new students with reluctance, considering it unfair to encourage them in a field where opportunities were so strictly limited. His students were given considerable liberty of action for Barbour believed that if they were sufficiently keen they would make good.

Keen or otherwise, and not necessarily taking his courses, dozens of students found in Professor Barbour a good friend, willing to lend a sympathetic ear and financial support for their schemes. Through Dr. Barbour's generosity many a graduate was enabled to make his first collecting trip to the West Indies, Mexico, or Central America. Such expeditions played an essential part in their education, said T. B., and when the returning travellers related their experiences, Barbour relived his own earlier trips with gusto.

Not that the Professor ever became an armchair naturalist—quite the contrary—for, with a regularity that was almost proverbial he departed from Cambridge each February and the museum saw no more of him until May. These annual migrations took him to many countries of which Cuba and Panama were the most frequently visited. This was on account of the research stations set up in those lands, for in line with his idea of a student's training being rounded off by field experience, Dr. Barbour played a large part in founding the Barro Colorado Laboratory, later known as the Canal Zone Biological Area.

I doubt if any of the many undertakings in which Barbour engaged ever gave him so much satisfaction as the launching of this project. Barro Colorado, formerly a forested mountain top, had been transformed into an island by the man-made flood that produced Gatun Lake. The rich tropical forest of the new island carried an abnormally abundant population of animal life, refugees from the rising waters of the lake. The original scheme, recently superceded, was for a dozen contributing institutions to have the right to nominate students who, for a small fee, might

enjoy the use of the laboratory facilities. Actually during the initial years Barbour bore much of the financial burden. It was he who bought out the few banana-growing squatters, installed James Zetek as Superintendent, and with him prepared a site to which one of the Canal Zone buildings was transported to serve as laboratory headquarters.

It was upon his return from Panama that year—1924, that I first met Barbour, who, foreseeing the ever-increasing demands upon his time, had invited me to assist him in "reorganizing the reptile collection." The collection then, as now, was quartered in the basement, but T. B. occupied a large room on the first floor.

On entering I was greeted by a genial giant of a man with a friendly smile and curly hair, a lock of which he would coil and uncoil about a forefinger when perplexed. As I already knew, we shared a common interest in all the varied forms of animal life. What I had not realized was that he was almost as deeply interested in plants with whose names and habits he was bewilderingly familiar.

He had a prodigious memory for names, not merely of animals and plants, but of people and places, and frequently astonished me in the years that followed by his knowledge as to the precise number of examples of this or that species in the herpetological collections. "Not so surprising," he would reply, "seeing that the collections and I have grown up together for a quarter-century." Nevertheless the amount of detailed information stored in his mind continued to amaze me.

Yet Barbour used to say quite frankly that he disliked details and did not want to be bothered with them. When I inquired about museum hours he replied that there were none except that the Director's permission must be obtained if one wished to remain in the building after 6 p. m. "There's no clock-punching here," he continued, "we like to think of the place as a sort of zoological club whose members are sufficiently keen on their work to put in a good day's work, but there are no stated hours, each comes and goes as he pleases."

Dr. Barbour's attitude towards the collection so largely built up through his munificence, was typical of the man. For if a request came from some university worker requiring material for study or dissection, Barbour would unhesitatingly grant the request so long as the species was adequately represented, saying that one of the functions of a university museum was to promote research. The open-handed liberality that he displayed was, of course, made possible by his intensely personal interest in the collection.

No sooner was the Barro Colorado Laboratory established than T. B. arranging with Mrs. Atkins to have biological students visit her beautiful estate at Soledad, Cienfuegos, Cuba, already deeded to Harvard. Dr. E. R. Dunn was among the herpetologists that availed themselves of the facilities thus provided.

Then there was the snake-census in Honduras and the Canal Zone which Dr. Barbour inaugurated by paying a bonus for every snake killed by the

plantation hands of the United Fruit Company. For a time the office was periodically swamped with thousands of snake-heads requiring identification and statistical compilation. This led to the founding at Lancetilla, near Tela, of a snake farm where serpents might be periodically milked of their venom. The venom was dispatched to the Mulford Biological Laboratories, Glenolden, Pennsylvania, to be used in the production of neotropical antivenin. Simultaneously steps had been taken to provide antivenin for use against the bites of neartic snakes, the two divisions being united in the Antivenin Institute of America with whose foundation and quarterly bulletin Dr. Barbour played a prominent part.

I count myself fortunate to have shared T. B.'s office during those hectic years for it was an unforgettable experience. He would read or pass on interesting letters from his considerable mail that was handled so efficiently by Miss Helene Robinson, who remained his secretary to the very end. Then there was a constant stream of visitors from far and near, many seeking counsel or help.

Despite all these activities, and at times exasperated by constant interruptions which are not conducive to the careful appraisal of taxonomic problems, Barbour yet managed to write prolifically. A bibliographical list of his publications during the years 1901-1943 was privately printed in pamphlet form in 1939 and 1944. It will be seen that his output of papers on herpetology alone exceeded 200 during a forty-year period. Among them the "Check List of North American Amphibians and Reptiles," with his revered friend Leonhard Stejneger as co-author, ran through five editions. These useful volumes have proved a boon to naturalists, generally speaking, though they have met with some criticism on account of certain omissions or inclusions that appeared arbitrary, points that can be readily remedied by submitting future editions to a committee of herpetologists.

In 1927 when Samuel Henshaw retired from the Directorship of the museum, he was succeeded by Thomas Barbour, who immediately instigated a whirlwind house-cleaning and rearranging of exhibits. Then followed a decade of great activity for the museum staff with T. B., the moving spirit, ever in the van. Busy though he was, however, Dr. Barbour usually managed to retire to the museum steps for a smoke at 11 a. m., and again after lunch. At such times his colleagues would lay their plans before him for consideration, or in merry mood Barbour would draw upon his great store of anecdotes for the delectation of us all.

But the time came when the condition of T. B.'s heart led the doctor to put a ban on smoking, and those pleasant gatherings on the steps became a thing of the past. Thereafter his friends met him at the luncheons that he gave in a little room adjoining his office, a room that T. B. facetiously designated "The Eateria." To one to whom an open-air life had meant so much, the curtailment of his activities must have been especially trying. During this period T. B. derived much pleasure from recalling incidents of the past and setting them down in a series of vol-

umes that others might enjoy them too. Those already published are "A Naturalist at Large" (1943); "That Vanishing Eden; a Naturalist's Paradise" (1944); "A Naturalist in Cuba" (1945); and "A Naturalist's Scrap Book" (1946: Harvard Uuiversity Press).

When at Miami in February, 1944, Dr. Barbour was taken ill with a blood clot on the lung, and while still in hospital, recovering from this, he developed pneumonia. But medical skill pulled him through so that he was spared to the museum for nearly two years more. He came to his office as usual on Friday, January 4, 1946. Later in the day he accompanied his niece, Miss Joanna Hale, to the movies and greatly enjoyed the humorous episodes, for he was in excellent spirits. During the night, however, he suffered a cerebral hemorrhage from which he never recovered consciousness, passing peacefully away at the Phillips House hospital at 5 p. m. on January 8th, 1946. His passing is being mourned by many for we shall not see his like again. His was a unique personality that almost to the end retained a boyish impetuousness and enthusiasm for a great variety of things, yet never too engrossed in personal pursuits to extend a helping hand to those in trouble.

Identification of *Lepidochelys kempii* (Garman)

The writer has had considerable field experience with marine turtles in Key West, Florida, while collecting fish for the New York Aquarium. The bastard turtle, as it is called, is seldom brought to market since it is not considered fit for food. For this reason it is impossible to estimate its relative abundance, but it is my impression that it is uncommon at Key West.

The reason for this note is to mention a means of identification not seen elsewhere. This turtle is so different in the flesh from *Caretta caretta* (L) that it had never occurred to me that there was any possibility of confusion until I saw O. P. Hay's "On three existing species of sea-turtles," U.S.N.M., No. 1605, 1908.

The point in mind was shown me by Key West "Conchs," not as a means of identification, which could not be needed, but as a point of interest. If the shell of a living *kempii* be tapped with the knuckles, shoe, a stick or other hard object, the resultant noise is identical to tapping on an old dead log which has rotted inside, but still retains a hard outside crust. Similar tapping on any of the other species of turtles sounds like tapping a living thing.

Chapman Grant.

Alsophis angulifer adspersus (Gundlach and Peters)

BY CHAPMAN GRANT

The subspecies *Alsophis angulifer adspersus* was established by Gundlach and Peters, Monatsb. Berl. acad., 1864, p. 388.

Stejneger, 1917, U.S.N.M., No. 2205, p. 283 lists the subspecies saying: "Doctor Barbour informs me that the specimens from eastern Cuba which he has examined agree in having light centers to the scales, and expresses the opinion that they represent a fairly well characterized form. Our specimens corroborate this conclusion. The ones from Guama, collected by Bowdish, are dark with light centers. A specimen (No. 29790) taken by Palmer at El Cobre on Feb. 22, 1902, is quite light, because the light central spots occupy nearly the whole scale, leaving only margins dark, nearly blackish, on the anterior portion of the body." There follows a table with data of four adult specimens.

Barbour and Ramsden, 1919, Mem., M.C.Z., Vol. 42, p. 195 at the close of their description of "Alsophis angulifer (Bibron)" say: "Specimens from Oriente which we have seen have the scales each with a white dot at the apex and have given rise to the trinomial *adspersus* . . . Dr. Stejneger's recent paper shows that all the examples from Oriente in the U.S.N.M. show this color-character, so that the race *A. angulifer adspersus* may be considered established. The collection of the junior author substantiates this observation."

Dr. Barbour in a letter dated Aug. 20, 1945, states that he has no further information on this form.

In view of the above evidence it is not clear why Dr. Barbour did not list *A. angulifer* as a trinomial and give a separate heading for *A. a. adspersus*. Furthermore Dr. Barbour has not included *adspersus* in any of his three lists of West Indian herpetology. (Zoologica, 1930, Vol. 11, No. 4; Zoologica, 1935, Vol. 19, No. 3; Bull. MCZ, 1937, Vol. 82, No. 2).

No area of intergradation has been determined, but nevertheless the burden of proof for the synonymization of *adspersus* lies with future students. In the meantime the form should be recognized.

Zoological Nomenclature and Some of Its Difficulties

By JOSHUA L. BAILY, JR. *

* Research Associate in Malacology of the San Diego Society of Natural History. Sc. D. Johns Hopkins University 1938.

When our first progenitor, Adam, seated himself on the reviewing stand to give names to the parade of animals passing before him (1) he became not only the first nomenclatorial zoologist but the only one who didn't have to compile long lists of synonymies and bibliographic references. He didn't have to bother himself with type localities, and there was no law of priorities to trouble him. This happy state of affairs endured for upwards of a thousand years, so that when the first field naturalist Noah (2) sat down at his work bench to make labels for his natural history collection, the names that had already been published in the *Fauna Edenensis* (3) sufficed for him.

Another long period passed before the first taxonomist undertook the division of the animal kingdom into clean and unclean beasts (4). Moses apparently was not an acute observer; he watched the rabbit's nose twinkling and concluded it was chewing its cud (5). He believed in pre-natal influence (6) and his statement that the quails in the Sinai peninsula stood two cubits above the ground (7) strains the credulity of most readers and has led at least one to suggest that these birds may have been herons or even dodoes. (8). His description of the plague of mosquitoes, however, is sufficiently realistic to suggest the cranberry bogs of New Jersey. (9).

It is a far cry from Moses to Aristotle. The latter was certainly the greatest naturalist of antiquity, if not of all time. He knew that whales were not fish, and that sponges were animals (10). His taxonomic system is strangely anticipatory of that of Lamarck (11) which was published more than two millennia later.

But in one respect the writings of Aristotle show no advance beyond those of Moses; his terminology was the vernacular used in ordinary contemporary conversation. And this was true also of Pliny (12, 13), the mediaeval writers, and most of the scholars of the renascence, down to John Ray, whose name according to his most recent biography (14) is second only to that of Isaac Newton in British science.

Ray devised the idea of giving every species a name consisting of two words, the first of which, the generic name, was to be a noun, and was to be shared with similar species, and would thus indicate the position of its species in nature. The second word was to be an adjective, and was to serve the purpose of distinguishing its species from others of the same genus. Because the name consisted of two words this nomenclatorial method is called the "binominal system.

It must not be supposed that Ray invented binomial nomenclature—he was merely the first to apply it to objects of animate nature. Testimony as to its existence in the 15th century, two centuries before Ray was born, is found in the question asked by Thomas a Kempis, "What have we to do with genera and species?" (15).

One answer is that the biological world had nothing to do with them for another hundred years, during which Ray's name was all but forgotten. Subsequent writers resorted to a polynomial system in which the name was a more or less abbreviated description of the species. As an example of polynominal nomenclature we may note "Serpens Arabica, fusca, maculis nigricantibus flammatis notata" (16). Another from the same author is "Serpens Arabica, viridis, maculis fuscis, aliisque nigricantibus ab utroque latere varigata" (16).

Polynomials of this sort have two distinct disadvantages. The more obvious one is their cumbersomeness. The second is the absence of any taxonomic value. This would probably not have been considered a serious defect in a world that had never heard of evolution, but in our day it is essential that related species be given names that indicate their relationship.

We must not assume, however, that all polynomials were as lengthy as those quoted above. It is possible for a polynomial to consist of but two terms. Such a name would be binary without being binomial. In theory the difference between binary and binomial nomenclature is well marked, the two terms of a binomial combination always indicating a genus and a species, while the binary expression is a more or less inadequate description. In actual practice, however, it is sometimes very difficult to determine whether some of the names given by eighteenth century writers should be considered binomial or merely binary. Linnaeus himself was somewhat confused on this point, and in an honest endeavor to give credit to his predecessors for their contribution to the advancement of natural history he used many pre-Linnean names in the earlier editions of his works that could only with difficulty be forced into the binomial scheme. It was not until 1758 that he decided to scrap everything that had been done before him and start from scratch (17).

The close parallel between the careers of Ray and Linnaeus is quite striking. Both were botanists; each in his student days formed a lasting friendship with a zoologist, Ray with Francis Willughby and Linnaeus with Pehr Artedi; both couples exchanged mutual promises to complete the work of whichever one might die first. In both instances the zoologist died young, leaving an unfinished work on fish, and in both instances the botanist completed the work of his friend and saw it through the press (14, 18).

Linnaeus' 10th edition was accepted at once, and today all zoological nomenclature begins with it, all pre-Linnean names having been discarded. But even during the life time of Linnaeus the number of animals

known to science had begun to increase, so that soon it became impossible for a single investigator to claim the entire animal kingdom as his field. The science of zoology had to be broken up into component parts, and the age of specialization had begun.

Now it should not be considered surprising if two investigators working in hermetically sealed compartments of zoological science, give the same name to different animals. This has happened many times. According to Bogert (19) the name *Hamadryas* was proposed by Hubner in 1806 for a butterfly from the West Indies. Thirty years later, Cantor proposed the same name for the East Indian king cobra, unmindful of its earlier application in entomology. In such cases the law of priority formulated by the International Commission on Zoological Nomenclature provides that the earlier use must prevail; therefore a new name was needed for the cobra. This was supplied in 1864 by Gunther, who named it *Ophiophagus*, by which name it must now be known.

The opposite case, in which two names are inadvertantly given to the same genus, can be illustrated by the names *Lampropeltis* and *Ophibolus*. The former was given by Fitzinger in 1843 (20). Ten years later Baird and Girard, apparently in ignorance of Fitzinger's earlier work, applied the latter name to the same genus (21). Then in 1898 Cope (22) decided that the earlier name was a "nomen nudum," that is to say, a name that was published either without a description or with such an inadequate one that its meaning cannot be known with certainty. Most modern systematic herpetologists do not agree with Cope on this point, but so great was the weight of Cope's authority that *Ophibolus* came into general (but not universal) use until 1917 when *Lampropeltis* was restored by Stejneger and Barbour (23).

Two different names for the same object are called "synonyms," two similar names for different objects are called "homonyms." Primary or Direct homonyms result from the use of the same name for different species within the same genus; Secondary or Indirect homonyms result when two species whose names were both legitimate as originally published are later assigned to the same genus. During the 19th century the number of synonyms and homonyms increased so rapidly that it became obvious that something needed to be done about it. And something was done when the International Commission on Zoological Nomenclature was established at Leyden, The Netherlands, in 1895.

This commission exercises a legislative function by the issuance of rules to systematize nomenclature; it also exercises a judicial function by rendering opinions governing the application of the rules to specific cases submitted to it, and it exercises an executive function because it has plenary power to suspend the rules in certain cases where the strict application of them would result in greater confusion than would their suspension. Ample provision is made against the abuse of this plenary power. An example of its use is afforded by the case of the name *Bitis*, proposed in 1842 by

Gray (24) for a genus of viperine snakes from Africa. The oldest available name for this genus in *Cobra,* given in 1768 by Laurenti (25) but this name is objectionable because in the vernacular of most European languages it has been used for a group of colubrine snakes from India. As both of these groups of snakes are highly poisonous, and as they necessitate videly different medical treatment in case of snake bite the objection to the use of the word "cobra" with two different meanings is obvious. The committee has therefore very wisely decided to suppress the name *Cobra* and to make *Bitis a* "nomen conservandum" (a name that must be saved) and to place it on the official list of generic names. (26).

Let us now consider some hypothetical cases of secondary homonyms in specific names to illustrate how the rules of the International Commission work out in practice. Suppose that Professor Bonehead discovers a new species of *Dingbattia,* which he wishes to name for his friend Dr. Cross. He therefore adds the letter "i" to Dr. Cross's name ("ae" if Dr. Cross is feminine) to make a genitive in accordance with the rules (27). He should then publish the name of the species as *Dingbattia crossi* sp. nov. Note that the name appears in Italics. The abbreviation following stands for "species nova" and indicates that the species is new. Such an indication should always be used the first time a name is published, but never thereafter, for reasons that will appear later. But suppose that he does not publish the name at all, but merely communicates his intention to do so to Professor Pinhead. Then if Professor Pinhead found it necessary to refer to this species in a later publication he would call it *Dingbattia crossi* Bonehead MS., the last two letters denoting that it is a manuscript name (i.e., that it has not been published).

Now manuscript names have no standing in systematic zoology, and the validity of this name dates only from its publication by Professor Pinhead (provided that Professor Pinhead described it adequately so that it is not a "nomen nudum"). Consequently if Professor Sorehead subsequently quotes the species he will designate it *Dingbattia crossi* (Bonehead MS.) Pinhead 1904. Professor Sorehead's desire to give Professor Bonehead the credit due him is altogether admirable, but it must be admitted that in many instances the inclusion of the manuscript author serves no useful purpose, since the publisher is the real authority, so that in most cases *Dingbattia crossi* Pinhead 1904 would be sufficient, and in fact the rules of the International Commission require no more. The rules do not even require the date of publication, but this has been found so helpful that many writers add it gratuitously.

Now let us suppose that as the result of Professor Sorehead's study he concludes that this species is not really a *Dingbattia* after all, but belongs to the genus *Piffelum.* He accordingly designates it *Piffelum crossi.* Then the question arises as to whose name shall be appended as authority—that of Professor Pinhead who first published the specific name, or that of Pro-

fessor Sorehead who originated the combination? Our friends the botanists believe that both names should be used, and if this species had been a plant the name would be written *Piffelum crossi* (Pinhead 1904) Sorehead 1906. But the International Commission has ruled that one authority is enough, and requires only the name of the species maker, which is left in parentheses to indicate that the genus has been changed since the original publication. Many modern systematists have dispensed with the use of parentheses for this purpose, and the International Commission has been requested to waive this requirement, but so far have taken no action. The botanical practice of using double authority citations is objectionable because it affords too great a temptation to amateur naturalists to divide genera too finely, in order to make opportunities for their own names to appear in print.

Incidentally, before passing to the further vicissitudes of *Piffelum crossi* we may note that zoological and botanical nomenclature are completely independent; that means that the same name may do duty in both kingdoms. This is unfortunate, because there is a group of single-celled organisms which the botanists and zoologists throw to and fro like the shuttlecock in badminton, and some of the names in this group are duplicated in the animal and vegetable kingdoms, so that every time this group changes kingdoms a new nomenclatorial shuffle is precipitated.

Now to return to *Piffelum crossi*. Let us suppose that after Professor Sorehead has published his findings Professor Fathead discovers that there already was a *Piffelum crossi* Figurehead 1905. Then there are two species with the same name, one of which must be renamed. Professor Pinhead's species was the first to receive the specific name, but Profssor Figurehead's was the first to receive the combination. The International Commission has ruled that the date of the specific name shall govern in such a case, so that it is Professor Figurehead's species that must be renamed. The Commission has also recommended when an old name has to be discarded for any reason that the author be given the privilege of suggesting the new one. This is a matter of common courtesy. In this case Professor Fathead breaks the news to Professor Figurehead that his species must be renamed, whereat Professor Figurehead, desiring to honor his old friend Dr. Wall, names the species *Piffelum walli* nom. nov. This last abbreviation means "nomen novum," or new name. If Professor Figurehead had been describing a new species he would naturally have written "sp. nov." but as the species was not new, but only the name, he uses the more appropriate expression "nomen novum," to indicate this. Of course subsequent writers will call this species *Piffelum walli* Figurehead 1907.

But the end is not yet. Eventually Professor Figurehead remembers that although he had published the name *Piffelum crossi* in 1905 as a "species nova" he had also published it in the same way in 1903. Don't ask how he could have been so absent minded as to have forgotten his own work; such things happen occasionally. Scott attributed one of his own poems to Byron (28) and Sargent failed to recognize one of his own portraits

twenty odd years after he had painted it. (28) while two weeks gave sufficient time to Schubert to forget one of his own songs. (28) Professor Figurehead simply had a lapse of memory, and the fact he used the abbreviation "sp. nov." with the second publication made trouble for Professor Fathead, who naturally figured that if Professor Figurehead's species was new in 1905 it must be younger than Professor Pinhead's which dated from 1904. But as Professor Figurehead's species really dates from 1903 it is Professor Pinhead's species that needs a new name. This misunderstanding might have been avoided had Professor Figurehead not published his name the second time as a new species.

Some authorities when quoting the name of a previously published species of their own do it thus: *Piffelum crossi* nobis. This latter word is a Latin dative plural meaning "to us." Like kings and editors, zoological authorities use the editorial plural, and owing to the idiosyncracies of Latin syntax, the dative of reference replaces the genitive under certain conditions.

Next, Professor Pinhead must be notified that he must rename his species, and in order to honor his friend Dr. Cock he names it *Piffelum cocki* sp. nov.

Then suppose Professor Blockhead, having followed the vicissitudes of these two species emerges in a confused state of mind. I am sure we can all sympathize with Professor Blockhead. Suppose Professor Blockhead goes to the type locality of *Piffelum cocki* and obtains some material which he concludes to be this species but which really are a different species whose name is *Piffelum pinki*. Bulkhead. If Professor Blockhead publishes anything about *Piffelum pinki* and by mistake refers to it as *Piffelum cocki* we have virtually two species called *Piffelum cocki*—the true one named by Professor Pinhead, and the false one named inadvertently by Professor Blockhead. Later writers referring to true species may sometimes do so as *Piffelum cocki* Pinhead 1908. not Blockhead 1909. Or in referring to Professor Bulkhead's species they may do as *Piffelum pinki* Bulkhead 1902 (= *Piffelum cocki* Blockhead 1909 not Pinhead 1908). It is not necessary of course, to use these designations in their entirety every time either species is mentioned, but it is highly desirable that this be done in every instance where confusion might arise otherwise. It has been the experience of the present writer that greater confusion has arisen from errors of identification than from any other cause, and that therefore these unduly lengthy authority citations occur more often than one might wish; therefore it is necessary for the student to know what they mean when he encounters them.

Finally let us suppose that Professor Cabbagehead, having made a careful anatomical study of Professor Pinhead's species should discover that it wasn't a *Piffelum* at all but belongs to the genus *Damphulia* and should therefore be called *Damphulia cocki* Pinhead 1908. Now, note that if this species which was originally described as *Dingbattia crossi* had been trans-

ferred directly from *Dingbattia* to *Damphulia* the need for a new specific name would never have arisen. The change in the specific name came about as the result of Professor Sorehead's mistake in thinking that the species was a *Piffelum,* and that its name was therefore a homonym of *Piffelum crossi* Figurehead 1903. The question now arises as to whether Professor Pinhead's species should be called *Damphulia crossi* or *Damphulia cocki.* Under a strict interpretation of the rules the name *cocki* would be used, but practically all systematists refuse to be bound by the rules at this point because the rules put a premium on dishonesty. All that an unscrupulous systematist need do to perpetuate his own name is to transfer a species to a genus in which the same specific name is already in use; the species is then given a new name and can then be transferred back to the genus to which it rightfully belongs. Of course no reputable systematist would ever stoop to such a subterfuge but a disreputable one might. An English paleontologist once tried to eliminate a rival by dropping a crate of fossils on his head from a shelf in the shop of a dealer (29) in the Strand. Any one willing to take the life of a competitor would feel no compunctions about stealing his species. In any case, the door is open, and the International Commission has been requested to rule in such a case that the species must be known by the name it would have taken had it been transferred directly from the genus to which it was originally assigned to that in which it ultimately comes to rest.

The lesson to be drawn from these miscellaneous animadversions is that zoological nomenclature is increasing in complexity at such a rate that it is rapidly becoming a science in its own right. The International Commission has even urged that universities give courses in zoological nomenclature and require candidates for advanced degrees to take them (30). The present writer would urge all those who have occasion to use zoological nomenclature to subscribe to all the publications of the International Commission. These are the Bulletin of Zoological Nomenclature, The International Rules of Zoological Nomenclature, The Official List of Generic Names in Zoology, and The Declarations and Opinions of the International Commission. The present writer finds these indispensable. The address of the publication office of the Commission is 41 Queen's Gate, London S.W. 7, England.

In conclusion, the writer wishes to thank Dr. Lawrence M. Klauber, curator emeritus of the National History Museum of San Diego for supplying most of the bibliographical references, and Dr. Carl L. Hubbs, zoologist of the Scripps Institution of Oceanography of La Jolla, for reading the manuscript.

LITERATURE CITED

1. Genesis II 20.
2. Genesis VI 19.
3. This work has been out of print for many years.
4. Deuteronomy XIV 4-20.
5. Leviticus II 6.
6. Genesis XXXI 37-39.
7. Numbers XI 31.
8. J. M. C. Plowden; Once in Sinai, Methuen & Co., London, 1940, p. 192.
9. Exodus VIII 24 Moffett's Translation.
10. Aristotle; Historia Animalium. Translated by D'Arcy W. Thompson. Oxford, 1910 at the Clarendon Press.
11. J. B. P. A. de M. Lamarck; Systeme des Animaux sans Vertebres, 1801.
12. H. N. Wethered; The Mind of the Ancient World. Longmans Green & Co. 1937.
13. Gains Plinius Secundus; Natural History. Translated by H. Rackham. Harvard University Press. 1938.
14. Charles E. Raven, D. D., John Ray, Naturalist. Cambridge University Press. 1942.
15. Thomas a Kempis; The Imitation of Christ, First Book, III 2. The Pocket Classics, David McKay Co., Philadelphia (not dated).
16. Albertus Seba; Locupletissime Rerum Naturalium Thesauri. Amstelaedami v. 2 p. 33. 1735.
17. Carolus Linnaeus; Systema Naturae, 10th ed. 1758.
18. Donald Culross Peattie; Green Laurels, Simon and Schuster, New York, p. 109. 1936.
19. C. M. Bogert; Copeia No. 1 p. 47. 1945.
20. Fitzinger; Syst. Rept., p. 25, 1843.
21. Baird and Girard; Cat. Rept. N. America, pt. 1 Serpents, p. 82. 1853.
22. Edward Drinker Cope; Annual Rept. Nat'l Mus., p. 902. 1898.
23. Leonhard Stejneger and Thomas L. Barbour; Check List N. Amer. Amph. Rept., first ed., 1917, p. 87.
24. John Edward Gray; Zool Miscell., p. 69. 1842.
25. Laurenti; Specimen medicum, p. 103. 1768.
26. International Commission on Zoological Nomenclature, Opinion No. 188, vol. 3 pt., 7 pp. 77 et seq. 1945.
27. International Rules of Nomenclature, Article 14. Proc. Biol. Soc. Wash., vol. 39, p. 78. 1926.
28. Atlantic Monthly, August 1929. Correspondence column.
29. Charles Davies Sherborn; Where is the—Collection? The MacMillan Co., New York. 1940.
30. International Commission on Zoological Nomenclature, Declaration 9, vol. 1 pt. 9, pp. 65 et seq. 1944.

4435 Ampudia St., San Diego, Calif.

An Annotated List of Papers on Herpetology From the Transactions of The Kansas Academy of Science

DONALD J. AMEEL

The Kansas Academy of Science is one of the oldest state academies in the United States. It first met as the Kansas Natural History Society on September 1, 1868 at Topeka. The Transactions were first published in 1872 and until 1944 (Vol. 47) with the exception of the period 1922-28 inclusive have appeared annually or biennially. The last two volumes (47 and 48) have been published quarterly.

It has always been a primary aim of the Academy to encourage original research. In recent years an endowment fund has been built up as a source of funds to be used in part as awards to aid research. Other aims of the Academy are the advancement of science in general, its diffusion not only to the scientist but to the layman as well, and the improvement of science teaching in the state.

Kansas has proved to be a good collecting ground for herpetological material, both living and fossil, and the results of work in this field have appeared in the Transactions over the years with consistent regularity. Many of the articles are concerned with purely local material while some are much broader in scope. The following list includes papers on fossil as well as living forms. An asterik before the title indicates that it is listed in the Zoological Record.

1877. Mozley, Annie E.
List of Kansas snakes in the State University Museum, 6: 34-35.
This list includes 14 genera and 33 species collected in Douglas and Wallace counties.

1877. Savage, Joseph.
On the bite of the rattlesnake. 6:36-38.
Two cases of snakebite and treatment are discussed.

1877. Williston, S. W.
American Jurrassic dinosaurs. 6:42-46.
The collections were made from the upper Jurassic beds of Colorado and Wyoming. A history of the discovery is given and the beds are described. Thirteen genera established by Cope and Marsh from these collections are listed and several are described.

1877. Snow, F. H.
On the dermal covering of a mosasauroid reptile. *(Liodon dyspelor* Cope.) 6:54-58.
The article includes an account of the discovery of this reptile in Gove County as well as a description of the remains.

1879. Cragin, F. W.
A preliminary catalogue of Kansas reptiles and batrachians. 7:112-120.
There are listed 12 species of turtles, 13 species of lizards, 49

species of snakes, six species of frogs, four species of toads and five species of salamanders.

1883. Cragin, F. W.
Second contribution to the herpetelogy of Kansas, with observations on the Kansas fauna. 9:136-140.
This paper supplements the author's earlier "Preliminary catalogue of Kansas reptiles and batrachians." Twenty three species of reptiles and amphibians are listed and discussed.

1885. Cragin, F. W.
Note on a new variety of a sonoran serpent from Kansas. 10:85-86.
A specimen of *Rhinocheilus lecontei* from Medicine Lodge, Kansas, is described.

1889. Snow, F. H.
The mode of respiration of the common salamander. 12:31-32.
The salamander, *Ambystoma tigrinum mavortium,* was observed in a laboratory jar. Professor Snow interpreted its periodic trips to the surface to be for the purpose of ejecting inspired air abstracted from the water. When the animal was submerged, a current of water was observed passing into the nostrils and out of the mouth. When at the surface the animal breathed air directly into the lungs like a frog.

*1890. Williston, S. W.
A new plesiosaur from the Niobrara Cretaceous of Kansas. 12:174-178.
The remains of a plesiosaur from the chalk of western Kansas are described and are given the name of *Cimoliosaurus.* The specimen consists of a skull and 28 cervical vertebrae in their normal positions.

1891. Williston, S. W.
An interesting food habit of the plesiosaurs. 13:121-122.
Quantities of smoothly abraided pebbles ranging in size from one-fourth of an inch to over three inches in diameter are almost invariably found in proximity to the ribs of certain plesiosaur remains. These are called "gizzard stones" and it is assumed that they were retained in the stomaches of these animals to aid in the digestive process.

1897. Parmenter, C. S.
Fossil turtle cast from the Dakota epoch. 16:67.
This specimen was found near Concordia, Kansas. It is eleven and one-half inches long and nine inches wide and is composed of the characteristic hard, red sandstone of the Dakota group.

1899. Williston, S. W.
A new turtle from the Kansas Cretaceous. 17:195-199.
A remarkably complete specimen of a fossil turtle collected on the Saline River in Trego County is described in detail and named *Porthochelys laticeps,* gen. et. sp. nov.

1905. Sternberg, Charles H.
Protostega gigos and other Cretaceous reptiles and fishes from the Kansas chalk.
This paper includes a description of a nearly complete specimen of the large tortoise *Protostega gigos* found in Logan County, Kansas. Also discovered in the same locality were specimens of *Platecarpus, Tylosaurus* and *Clidastes.*

*1906. Hartman, F. A.
Food habits of Kansas lizards and batrachians. 20 (Pt. 2): 225-229.
The stomach contents of seven species of lizards and nine species of batrachians were examined. The major portion of the food consisted of insects. The toad stood far above the rest in its consumption of insects. As a group, the lizards outclass the batrachians as insect destroyers.

1906. Snow, F. N.
Is the Gila monster a poisonous reptile? 20 (Pt. 2): 218-221.
The author had very little personal success demonstrating the poisonous nature of this lizard. However, he cites several authorities who discuss the vevnomous character of the animal. It is pointed out that the poison glands are located under the chin, that there is no direct connection between the glands and the teeth, and, that the animal must bury its teeth in the flesh of its victim, and must turn over on its back before any poison will flow into the wound.

*1908. Williston, S. W.
The skull and extremities of *Diplocaulus.* 22:122-131.
Specimens of what appear to be *Diplocaulus magnicornis* and *D. limbatus* secured from the Permian bone-bed near Orlando, Oklahoma, are described. The excellence and abundance of the material has led to the discovery of much that is new, not the least of which is the discovery of small but well formed limbs, both anterior and posterior, which had not been detected in earlier collections of specimens of this genus.

*1908. Moodie, Roy L.
The carboniferous quadrupeds in relation to the classification of Amphibia and Stegocephala. 22:239-247.
Several species of fossil Amphibia are briefly described. A proposed classification of the known fossil Amphibia is included.

*1908. Sternberg, Charles A.
An armored dinosaur from the Kansas chalk. 22:257-258.
An account is given of the discovery of the remains of an armored dinosaur in the Kansas chalk.

*1908. Dyche, L.L.
The poison-glands of a rattlesnake during the period of hibernation. 22:312-313.

The snake *(Crotalus confluentus)* was collected late in October, 1908, in a prairie dog town near Wakeeney, Kansas, at a time when snakes typically were in hibernation. Inquiry revealed that this species of snake was sometimes seen basking in the sun as late as the middle of November and as early as the middle of March. The poison glands were dissected from the surrounding tissues and were found to be empty and shrunken. It is postulated that venom may be absent from the poison glands of rattlesnakes and, perhaps, of other poisonous snakes during hibernation.

1908. Smyth, Bernard B.
Notes on the Gila monster *(Heloderma suspectum)* 22:384-385.
In captivity and in a cold climate this poisonous lizard is a most inoffensive creature. It can subsist and keep fat on about four square meals a year. Fresh hen's eggs prove to be a very acceptable diet.

*1911. Moodie, Roy L.
An embryonic plesiosaurian propodial. 23 and 24:95-101.
The specimen described is in the University of Kansas Museum. It is assumed to be from the Niobrara Cretaceous but the locality is unknown.

*1928. Gloyd, Howard K.
The amphibians and reptiles of Franklin County, Kansas. 31:115-141.
Forty-seven species and subspecies (nine amphibians, six lizards, 26 snakes and six turtles) are represented. More than 1500 specimens were collected in this study and observations were made on their habitats, behavior and life histories.

*1932. Walker, M. V.
A new burrowing lizard from the Oligocene of central Wyoming. 35:224-231.
The skull only was collected in the Badlands near Douglas, Wyoming. It is described in detail and is given the name, *Rhineura sternbergii.*

*1932. Smith, Hobart M.
A report upon amphibians hitherto unknown from Kansas. 35:93-96.
This report adds *Typhlotriton spelaeus, Eurycea melanopleura, Rana clamitans* and *R. palustris* to the list of Kansas amphibians. Specimens of these species were collected in the southeastern corner of the state.

*1933. Burt, Charles E.
Some distributional and ecological records of Kansas reptiles. 36:186-208.
Exact locality records are given of collections of specimens of 13 species of lizards, 32 species of snakes and nine species of turtles.

*1933. Smith, Hobart M.
On the relationships of the lizards *Coleonyx brevis* and *Coleonyx variegatus* 36:301-314.
Previous to this paper the relationship of these two species were in doubt. Seventy-five specimens were studied and it is concluded that no intergradation occurs, that the species are quite distinct and that their ranges neither overlap nor are they contiguous.

*1933. Smith, Hobart M.
Notes on some Mexican lizards of the genus *Anolis*, with the description of a new species, *A. megapholidotus*. 36:315-320.
Anolis sallaei, A. nebuloides and *A. gadovii* as well as *A. megapholidotus* sp. nov. are described from specimens collected in various states of Mexico during the summer of 1932.

*1933. Smith, Hobart M.
An addition to the amphibian fauna of Arkansas. 36:321-322.
Manculus quadridigitatus was identified in two collections from Arkansas. One hundred and sixty-six specimens were collected at Lewisville, Lafayette Co. and a single specimen was collected at Mulberry, Crawford County.

*1934. Brennan, L. A.
A check list of the amphibians and reptiles of Ellis County, Kansas, 37:189-191.
The author lists nine species of amphibians, five species of turtles, eight species of lizards and 17 species of snakes. Ellis County is located in the prairie section of Kansas.

*1934. Burt, Charles E. and Hoyle, Wm. Luther.
Additional records of the reptiles of the central prairie region of the United States. 37:193-216.
The area covered includes sections of Indiana, Illinois, Iowa, Missouri, Arkansas, Oklahoma, Kansas, Nebraska, South Dakota, and Wyoming. Original observations have been made on the habits and habitats of certain species. Eleven species of turtles, 14 species of lizards and 35 species of snakes are listed.

*1934. Smith, Hobart M.
Descriptions of new lizards of the genus *Sceloporus* from Mexico and southern United States. 37:263-285.
Five new species are described. One feature these species have in common is their relatively small size. The author emphasizes the importance of the arrangement of the scales in the nasal region as an aid in distinguishing the species.

*1934. Smith, Hobart M.
Notes on some lizards of the genus *Phrynosoma* from Mexico. 37:287-297.
Specimens of six species and subspecies of *Phrynosoma* are described in detail.

*1935. Burt, Charles E.
A key to the lizards of the United States and Canada. 38:255-305.
This key covers all of the known species and subspecies of lizards in the United States and Canada. Included is a glossary of terms, a check list which includes the common names, and a list of references to some of the most important publications dealing with the lizards of the United States and Canada. There are 71 excellent figures illustrating morphological or taxonomic features.

1935. Harbaugh, M. J.
The occurrence of *Phrynosoma coronatum frontale* in Montana. 38:317.
The specimen described was captured at the base of Mt. Sentinel, near Missoula, Montana. Since heretofore this species had not been taken outside of California, it is suggested that the animal may have been introduced.

*1935. Taylor, Edward H.
Notes on a small herpetological collection from Western Australia. 38:341-344.
The collection was made in Perth, Western Australia and consists of specimens of nine different species.

*1935. Taylor, Edward H.
Proposed changes in the nomenclature of the scinoid lizard genus *Eumeces*. 38:345-347.
The status of 25 species and subspecies is discussed.

1935. Wooster, Lyman C.
Description of amphibian tracks found at Osage, Kansas. 38: 349.
The tracks described and illustrated are in a slab of shale exhibited in the museum of the Kansas State Teachers College of Emporia.

*1936. Breukelman, John and Downs, Allen.
A list of amphibia and reptiles of Chase and Lyon Counties, Kansas. 39:267-268.
The list consists of ten species of amphibians, nine species of lizards, 20 species of snakes and five species of turtles.

*1936. Hibbard, Claude W.
The amphibians and reptiles of Mammoth Cave National Park proposed. 29:277-281.
The list is annotated and consists of 63 species and sub-species of which 29 are amphibians and 34 are reptiles.

*1936. Taylor, Edward H.
Notes and comments on certain American and Mexican snakes of the genus *Tantilla,* with descriptions of new species. 39:335-348.
Four American and six Mexican species are discussed. Three of the Mexican species are described as new species.

*1936. Taylor, Edward H.
New species of amphibia from Mexico. 39:349-363.
Four new species of Mexican frogs are described.

*1937. Byrne, Frank.
A preliminary report on a new mammal-like reptile from the permian of South Africa. 40:221-231.
The description of this dinocephalian is based on an almost complete vertebral column, a great number of rib fragments, the principal portions of the girdles, limbs and feet, both pectoral and pelvic, and a portion of the lower jaw. This form is compared with other dinocephalians and the relationships of mammal-like reptiles is discussed.

*1937 Brennan, L. A.
A study of the habitat of the reptiles and amphibians of Ellis County, Kansas. 40:341-347.
Collections of reptiles and amphibians were made and listed from the following habitats: mixed prarie (39 species), flat-rock hillside (15 species), rocky hillside (13 species), stream (13 species), swamp (seven species), permanent mixed prairie pond (ten species), and temporary mixed prairie pond (eight species).

*1937. Burt, Charles E.
The lizards of the southeastern United States. 40:349-366.
Eighteen species and subspecies of lizards are listed and discussed. All collection records are included.

*1937. Tihen, Joe A.
Additional distributional records of amphibians and reptiles in Kansas counties. 40:401-409.
This is simply a list of locality records of 13 species of amphibia, eight species of lizards, 32 species of snakes and eight species of turtles.

*1938. Burt, Charles E.
The frogs and toads of the southeastern United States. 41:331-368.
The states covered by this paper are Florida, Georgia, Alabama, Mississippi, Tennessee, North Carolina and South Carolina. Thirty-four species and subspecies of frogs and toads are listed. A key is included. Each species is discussed as to characteristics and habitat and the collection records are given.

*1939. Brumwell, Malcolm J.
Variation in the snake, *Thamnophis macrostemma* Kennicott. 42:423-429.
The author compared 83 specimens of *T. macrostemma* from eight localities in Meixco on the basis of ventral scutellation, proportionate head length and color pattern. There is a reduction in the total number of ventral scales toward the southern part of its range. Color pattern alone leads to the differentiation of four geographical groups.

*1939. Tihen, Joe A. and Sprague, James M.
Amphibians, reptiles and mammals of the Meade County State Park. 42:499-512.
Most of the park area consists of the high plains type of habitat. The author describes the habitats and habits of three species of toads, four species of frogs, five species of lizards, 15 species of snakes and six species of turtles.

*1940. Byrne, Frank.
Notes on the evolution of the mammal-like reptiles. 43:291-296.
The therapsid phylogeny is interpreted exclusively on postcranial structures, with particular reference to the relations of the dinocephalians to one another and to other therapsid groups. It seems to be generally accepted that the mammal-like reptiles were derived from cotylosaur stock, perhaps from a primitive unknown member of the progressive captorhinomorph group.

1940. Brumwell, Malcolm J.
Notes on the courtship of the turtle, *Terrapene ornata*. 43:391-392.
The courtship activities of two different pairs were observed. In each instance, preceding copulation, there was a prolonged pursuit of the female by the male which followed a typical pattern.

1943. Smith, Hobart M.
Comments on G. Jaris papers on venomous serpents and the Coronellidae. 46:241-242.

1943. Smith, Hobart M. and Mittleman, M. B.
Notes on the Mansfield Museum's Mexican reptiles collected by Wilkinson. 46:243-249.
The collection numbers 247 specimens consisting of nine species of snakes and ten species of lizards.

1945. Bugbee, Robert E.
A note on the mortality of snakes on highways in western Kansas. 47(3):373-374.
A total of 57 dead snakes was counted on 260 miles of highway. Of this number 31 (54%) were bull snakes.

1945. Lane, H. H.
New mid-Pennsylvanian reptiles from Kansas. 47(3):381-390.
Petrolacosaurus kansensis, gen. et sp. nov., is described from a nearly complete hind limb of a pelycosaur. *Podarogosaurus hibbardi*, gen. et sp. nov., is described from a practically complete fore limb, the crural, tarsal and pedal portions of a hind limb, a second fore limb, a few trunk vertebrae, a few ribs, and a long series of caudal vertebrae. Remains of both species were found near Garnett, Kansas.

KANSAS STATE COLLEGE, MANHATTAN, KANSAS.

Nomenclatural Notes on Two Southeastern Frogs

By M. B. MITTLEMAN

In a recent paper (1939) Harper has rather extensively reviewed the natural history, taxonomy, and nomenclature of the little hylid, *Pseudacris ocularis*. Amongst other things, Harper has advanced the opinion that the first recognizable description of this species was drawn up by Bosc and Daudin (*in* Sonnini and Latreille, 1801, Hist. Nat. Reptiles, Deterville ed., 2:187), as *Hyla ocularis*, rather than Holbrook's *Hylodes ocularis* (1838: 79, pl. 14) as most subsequent authors have considered it. That Bosc and Daudin described a *Hyla ocularis* as cited, is apparently beyond dispute. But that their species is properly identifiable with the later *Hylodes ocularis* Holbrook (*Pseudacris ocularis*, auct.) does seem to me to admit of considerable question.

Of Bosc and Daudin's original description of *Hyla ocularis* (1801), I have only that which Harper (1939: 138) has republished. In addition, however, I have before me Daudin's *Histoire Naturelle des Rainettes, des Grenouilles et des Crapauds*, folio edition, 1802, in which the species is redescribed by Daudin (pp. 22-23, pl. 20, fig. 2). Daudin's description in the "Rainettes" is essentially similar to that given originally in Sonnini and Latreille save for a few points of greater detail. I quote it as given:

> XVI. RAINETTE OCULAIRE *HYLA OCULARIS*
>
> *Hyla griseo-argentea, vitta laterali fusca ex oculis ad altus protensa.*
>
> Caract. phys. Longeur de six a dix lignes. Iris dorés, prunelle noir. Tete peu obtuse, grise en dessuset brune sur les cotes; dessus du corps gris-argentin, finement pointillé de brun, avec une bande brune assez [p. 23] large partant des yeux et se prolongeant sur les cotes jusqu' aux deux tiers l'abdomen; dessous du dentre d'un blanc-argentin granulé; dessous de la tete et des membres lisse, et d'une teinte un peu plus grisatre. Doigts des pieds antérieurs tendus, et ceux des postérieurs demi-palmes; dessus des miembres d'un gris-argentin, ayant des bandes transversales brunes.

I find it difficult to reconcile this description and illustration with the animal we recognize today as *Pseudacris ocularis*. Harper (1939: 140) has pointed out that the description may be composite, and may have been based on specimens of *Acris gryllus* as well as *P. ocularis*, but concludes that "as a whole, or in all characters save the maximum length, the description applies to *H. ocularis* [*Pseudacris ocularis*] rather than to Acris." I cannot agree with this, and believe that the description applies rather obviously to *Acris*. To substantiate this, I point out the following:

1. Daudin states "Tete peu obtuse," and his plate clearly shows a blunt-headed frog which is in marked contradistinction to the prominently pointed and long-snouted *P. ocularis*. The character of the snout length and acute conformation in *P. ocularis* has been repeatedly mentioned by many authors.

FIG. 1. Daudin's figure of *Hyla ocularis* Bosc and Daudin, 1801 (pl. 20, fig. 2, *in Histoire* Naturelle des Rainettes, des Grenouilles et des Crapauds, folio ed., 1802).

2. Both Daudin, and Bosc and Daudin, mention "Doigts des pieds . . . posteriéurs demi-palmés," and Daudin's plate clearly shows a frog with the digits of the hind limbs very prominently webbed. *Acris* has a hind foot which is notably webbed, while *P. ocularis* has the webbing so reduced as to be barely discernable.

3. The size as given in the original description of *Hyla ocularis* is "six lines or more," which as Harper (*loc. cit.*) points out, is equal to 13.5 mm. or more, as the case may be. Daudin augments this (1802: 22-23), and states that the size is six to ten lines (13.5-22.5 mm.), and mentions that specimens of this greater size are in the Museum of Natural History in Paris, although he mentions that in Bosc's opinion the species is the smallest in the genus *"Hyla"* (sensu lato). Harper has attached considerable weight to the 13.5 mm. size, and because *P. ocularis* is the most diminutive of our native Hylidae, feels that the probabilities are that such a dimension is strongly indicative of this species. The maximum size given by Daudin (ten lines - 22.5 mm.) is admittedly larger than the maximum known size attained by *P. ocularis* (19 mm., fide Brandt, 1937: 218) according to Harper, and he suggests therefore the possibility of the description being based in part on *Acris*, or else that *Pseudacris ocularis* may actually have attained such a size years ago. There seems little reason

to consider the latter possibiity, and while the former hypothesis cannot be dismissed, I would suggest the equally feasible probability that Bosc collected and observed adult *Acris* and newly-transformed individuals as well. Wright has recorded (1932: 188) a transformation size of 9-12 mm. for *Acris,* and insofar as abundance is concerned, in late Spring these small fry literally swarm from their natal ponds, ditches, and surrounding habitats.

4. Daudin mentions (1802: 22) that the iris is golden. I do not know the color of the iris in *Pseudacris ocularis,* but Cope mentions (1889; 329), in treating *Acris g. crepitans* that "the iris of this subspecies is golden." In other matters of color and pattern the descriptions and illustration given by Bosc and Daudin, and by the latter alone, are, according to Harper, quite unmistakably applicable to *P. ocularis.* It is difficult to know just why Harper maintains this. Certainly it is true that *P. ocularis* often has an interocular triangle, and occasionally body stripes, but while these are usually neither bold nor extensive in this species, they are characteristically so in *Acris.* The heaviness of the pattern, the prominent femoral bars, and possibly the more compact habitus, all suggest to my mind *Acris.*

To sum up, we have the description of a frog which has a comparatively blunt head, hind toes which are at least half-webbed, a maximum size of 22.5 mm. attained, and eyes, color, and pattern which are strongly suggestive of the form currently recognized as *Acris gryllus.* By comparison, in *Pseudacris ocularis* the head is prominently elongate and pointed, the toes are barely webbed, and a maximum known size of but 19 mm. is attained; in pattern and color possible agreement may be found with the *Hyla ocularis* Bosc and Daudin, as pictured by Daudin.

In view of the foregoing data I am of the opinion that Bosc and Daudin's description of *Hyla ocularis* is preponderantly, if not completely, illustrative of the form currently recognized as *Acris gryllus* (LeConte), 1825, and as such, constitutes the first identifiable and acceptable characterization of this species. It is therefore necessary to designate the animal as *Acris ocularis* (Bosc and Daudin), 1801, type locality Charleston, South Carolina. This step in no way negates the validity of *Hylodes ocularis* Holbrook, 1838, as the first recognizable description of the Savanna Cricket, which should continue to be called properly *Pseudacris ocularis.*

Literature Cited

Bosc, L. A. G. and F. M. Daudin
1801 La raine oculaire, Hyla ocularis, etc. p. 187, *in* Sonnini, C. S. and P. A. Latreille, Histoire naturelle des reptiles. Paris: 2:1 - 332, pls. 1-21.

Brandt, B. B.
1937 The frogs and toads of eastern North Carolina. *Copeia,* 4: 215 - 223.

Daudin, F. M.
1802 Histoire naturelle des rainettes, des grenouilles et des crapauds. Folio ed. Paris: vi + 7 - 71, pls. 1 - 38.

Harper, F.
1939 Distribution, taxonomy, nomenclature, and habits of the little tree-frog *(Hyla ocularis)*. *Amer. Midl. Nat.*, 22 (1): 134 - 149, figs. 1 - 5.

Holbrook, J. E.
1838 North American herpetology; or, a description of the reptiles inhabiting the United States. First ed. Philadelphia: 3: viii + 9 - 122, pls. 1 - 30.

LeConte, J.
1825 Remarks on the American species of the genera *Hyla* and *Rana*. *Ann. Lyc. Nat. Hist. New York*, 1 (2): 278 - 282.

Wright, A. H.
1932 Life histories of the frogs of the Okefinokee Swamp, Georgia. North American salientia (anura) no. 2. New York: xv + 1 - 497, fig. 1, pls. 1 - 45.

470 PELHAM ROAD, NEW ROCHELLE, N. Y.

Notes on Amphisbaena

BY CHAPMAN GRANT

In listing the herpetology of St. Thomas, V. I. (Grant p. 343) I stated that neither Mr. Nichols of the Agricultural Experiment Station nor I had found *A. fenestrata* (Cope) on that island. Mr. Harry A. Beatty of St. Croix wrote May 24, 1941 that he had found two specimens under large rocks at Dorothea, St. Thomas. He kindly presented them to me. They were found to correspond to the descriptions of the species. The larger measured 130 mm. There is considerable variation below the lateral fold; adjacent rows number 14 or 16 segments; above the fold 14 near the center of the body, but towards the rear there is considerable variation, some rows number 12 and some 14; dorsal and midventral sutures distinct, but lateral fold indistinct on anterior third of body.

The original description by Cope (1861, p. 76) gives the type locality as St. Thomas and St. Croix. I feel sure that it does not occur on St. Croix for the same undisclosed reason that the genus is absent on Jamaica. Cope's description is brief, the only positive identification is: nasals seperated; 12 caudral whorls; habitat Virgin Islands. Dumeril and Bibron (1834-54, p. 492) state that the specific name is not characteristic since the eyes are as much seen through the shield as in any Amphisbaenans. Strauch (1882, p. 87) says that his five examples have from 242 to 250 body and 13 to 15 tail rings; habitat St. Thomas, St. John and St. Croix. Boulenger (1885, p. 437) gives the dentition, mentions separate nasals, two temporals, 242-247 body and 15-16 tail rings, 12-14 segments above

and 14 below the lateral fold. Meerwarth (1901, p. 37) lists specimens in the Hamburg Museum from St. Thomas as typical; 243 annuli on body 13 on tail.

Amphisbaena caeca Cuvier, of Puerto Rico has 18, rarely 16 or 20 rows below the lateral fold. *A. fenestrata* of St. Thomas and St. John has 14 such rows. The fact that the population on Tortola (Grant, 1932, p. 343) should revert to 16 instead of retaining 14 or reducing still further makes this population stand out as quite distinct for a character which otherwise would appear to be trivial. *Amphisbaena* should have representatives on Virgin Gorda and Jost Van Dyke. The most assiduous collecting by Mr. Beatty for many years has failed to produce any record from St. Croix.

The nomenclature of the head scales is in some confusion. Stejneger (1904, p. 675) says in his key that *caeca* has one temporal and *bakeri* none. His fig. 128, diagramatically used, designates one postorbital and one temporal as normal for the genus. On page 678 he says that *fenestrata* has two temporals, but that Reinhardt and Luetken mention one temporal or postocular as an exception. If we adhere to fig. 128 all three forms have one postocular and *fenestrata* and *caeca* have in addition one temporal; *bakeri* having its temporal fused with the third upper labial is said to have no temporal. Dr. Cochran wrote June 28, 1941: "The 'postocular' and 'temporal' on an *Amphisbaena* refer to the same scale. I think it will take a study of the histology and embryology of the head to decide which name to use."

It might be less confusing if we adhere to Stejneger's fig. 128 and call them all postoculars, omitting the term "temporal" in this group.

The following incomplete synonymy of *fenestrata* must also serve as a bibliography for the above notes.

Diphalus fenestratus Cope, Proc. Acad. Phila., 1861, Vol. 13, p. 76; Proc. Am. Philo. Soc., 1869, p. 164.

Typhloblanus caecus Fitzinger, part., Syst. Rept., 1843, p. 22.

Amphisbaena caeca Cuvier, part., Regne Anim., Vol. 2, 2d ed., 1843, p. 73.

Amphisbaena antillensis Reinhardt and Luetken, Vid. Meddel. Naturh. Foren., 1862, p. 224; Zool. Record, 1869, p. 111.

Sarea caeca Dumeril and Bibron, Erp. Gen. 5, 1834-54, p. 492; Gray, Proc. Zool. Soc. London, 1865, pp. 442-445; Cat. Sh. Rept. Brit. Mus., 1872, p. 37.

Sarea? fenestrata Gray, Cat. Sh. Rept. Brit. Mus., 1872, p. 38.

Amphisbaena fenestrata Strauch, part., Mel. biol., 1881, p. 415, 478; Bull. Acad. St. Peters., Vol. 28, 1882, p. 87; Boulenger, Cat. Lizards Brit. Mus., 1885, Vol. 2, p. 437-449; Meerwarth, Mitt. a. d. Naturh. Mus. Hamburg, Vol. 18, 1901, p. 37; Stejneger, U.S.N.M. No. 129, 1904, p. 675-678; Barbour, Mem. M.C.Z., Vol. 44, 1914, p. 319 and 3 Antillean Lists; Grant, Jour. Dept. Agri., Puerto Rico, 1932, p. 333, 343-344; idem., 1936, p. 512, 519.

A Visit to the Crater of the Volcan Chiriqui

By Joseph R. Slevin

In August, 1937, the writer, while a guest of Mr. and Mrs. Robert Terry then residing in Boquete, Chiriqui Province, Panama, made a visit to the crater of the Volcan Chiriqui, a locality probably never before visited by anyone with the express purpose of collecting reptiles and amphibians.

Weather is an important factor to be considered in making a trip to the crater. The mountains in the direction of the peak were watched for several days before attempting the ascent and when a clear spell of three or four days was observed the start was made. Accompanied by my host and two Panamanian boys as guides and packers, together with a third boy who cared for the pack animal which carried our gear to the head of horse or mule navigation, an early morning start was made from Boquete. About noon we reached our stopping place and camp was made for the night, while preparations got under way for an early start in the morning. All hands turned out at 6 a. m. and after a hasty breakfast the two packers divided the load consisting of pup tents bedding and provisions, while Mr. Terry and myself packed our personal effects and collecting equipment. Leaving the third boy to return to Boquete with the pack animal we were off for the crater.

After climbing steadily uphill through dense brush and crossing deep barrancas we passed through heavy forests of bamboo, finally coming into more open country with a heavy growth of trees. About 4:30 in the afternoon we came to an opening in the trees an looked down into the crater, a welcome sight after a long hard pull. Making our way down to the floor, approximately 1,000 feet above sea-level, we headed for the north rim where there was a seepage from the crater wall to supply us with water. Here we pitched camp and got to work gathering some firewood as the nights in the crater are a little more than pleasantly cool. A hurried sortie made before it got too dark resulted in the capture of three or four lizards, which made me sleep much better that night knowing that my trip would not end in complete failure.

On awakening in the morning we found anything but a clear sky. Unfortunately most of the time the crater is covered by clouds, making the temperature quite cool, and only at short intervals when the sky is clear and there is some vestige of warmth from direct sunlight does insect and reptile life become apparent. Alligator lizards were found to be scattered over the entire crater floor, and mostly found in patches of dry grass hiding close down by the roots. One short interval of strong sunlight brought them out of hiding and five specimens were secured in the open, but close to cover. Strange to say three lizards were coiled up with salemanders under wet moss on the crater wall, despite the fact that it was ice-cold.

The salamanders, with two exceptions found under lava blocks on the crater floor, were all taken on the north wall of the crater by tearing off clods of earth and moss. The north rim of the crater apparently receives much more moisture than other parts and was the only place where water

was found dripping from the vegetation covering the walls.

Besides the series of the salamander *Oedipus subpalmatus* twenty-two alligator lizards were taken. The species was described by Cope in 1877 as *Gerrhonotus monticulus* from a specimen taken on the summit of Pico Blanco, Costa Rica, at an elevation of 11,500 feet. It is of particular interest on account of the wide difference in the coloration of the sexes which led Stejneger, in 1907, to describe the male as *Gerrhonotus alfaroi*.[1] The color description of a living adult male and female given below shows that the sexes probably differ in coloration as much as or more than any other species of the genus:

Male: Dorsal and lateral surfaces metallic black, profusely speckled with minute spots of yellow; undersurface of tail and body lemon-yellow, spotted with black; throat and chin greenish-blue.

Female: Dorsal and lateral surfaces chestnut-brown, spotted with black; a dorsal line of black extending from the base of the head well down on the tail; a lateral line of black, bordered above by one of yellowish-white, extending along the body and tail; undersurface of body and tail dark salmon; throat and chin greenish-blue. The female shows no spotting on the undersurface as does the male.

No doubt further investigations in this interesting region will yield other species of both reptiles and amphibians, but the collector is solely at the mercy of the weather which, in the main, will be responsible for success or failure.

[1]Proc. U. S. N. M. Vol. 32 pp. 505-506.

CALIFORNIA ACADEMY OF SCIENCES,
SAN FRANCISCO, CALIF.

The Reptiles of Maryland and the District of Columbia

By ROBERT H. MCCAULEY, JR., PH.D., Hagerstown, Maryland, 1945
194 pages, 16 pages of distribution maps, 16 plates of 48 figures. $2.50

Dr. McCauley's book has one outstanding fault in that only 500 copies were printed. The book is well designed and will be useful to so many local beginners in the field of herpetology that the limited supply will be entirely inadequate. It is also regrettable that conditions prevented the use of more durable paper to insure its use by posterity.

The first 30 pages are devoted to preliminary subjects vital to the use of the systematic part of the book. The matter covered is well chosen and logically arranged. Dr. McCauley is to be complimented on using parentheses only where there has been a generic change. He has adopted the best features of other state lists and added some of his own. The book can well serve as a guide for anyone considering a similar work for another area. The fact that the distribution charts and illustrations were offset required them to be grouped at the end of the book. It might have

been better to have had one large key map showing the county names instead of a repetition of small maps which are difficult to read.

Dr. McCauley is to be complimented on his fine work and the student is to be congratulated on having available a very readable, well illustrated and well mapped text book which is scientifically accurate and based on a great amount of research and field work. Chapman Grant

Feeding Pet "Chamelions"

By ELIZABETH N. HALIBURNT

Anolis carolinensis Voigt are often sold at circuses as "chamelions," a name which has great public appeal. A vendor goes among the throng carrying a board upon which are suspended these tiny creatures fastened by a collar and delicate chain. They are sold for a half dollar or less. Women wear them as ornaments and they make nice pets. The pet that I have was purchased at a circus Sept., 1945.

Some authorities claim that these lizards drink only droplets hanging from vegetation, but my pet drinks readily from a small container. In their natural habitat these lizards eat live insects, but it is not always possible to supply them with live food in captivity. At certain seasons flies can be lured into the cage by putting honey around a small hole in his screen, but at other times he does very well on grated carrots, eating a heaping bottle lid full during a day. Honey with pulverized nuts, guava jelly; lettuce cut into slivers; chocolate cake icing and cake crumbs. Occasionally he will eat a bit of well-beaten raw meat, such as liver or lights; turtle food (commercial); softened cereal; milk; soaked dog biscuit. It requires a very small helping of food to serve this diminutive tree lizard.

Captive specimens should be kept in a warm, sunny place. It is generally believed that they live only a few months in captivity, but if allowed some freedom such as climbing up the window drapes and hopping among flower pots or sunning on a twig placed in a sunny spot they will do very well.

KNOXVILLE, TENNESSEE.

The following incident seems apropos. I had stopped and was eating a sandwich near the summit of El Junque, the highest point on Puerto Rico. I carelessly flicked some crumbs of white bread towards a large male *Anolis gundlachi* Peters and to my utter astonishment he ate several. This food certainly did not remotely resemble anything available to this wild specimen.—Pub.